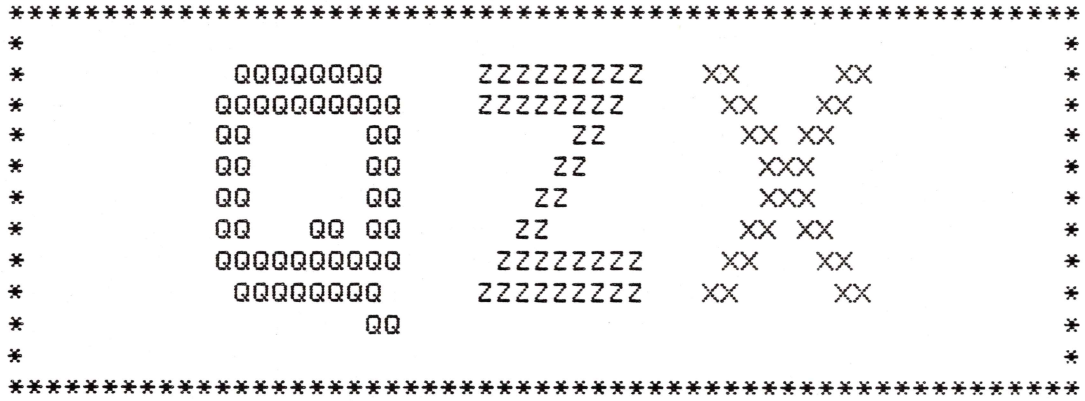

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EDITOR'S NOTES
K5XY

I tried to improve the layout a bit last month to no avail. My word processor is supposed to give me proportional spacing after a fashion under certain circumstances. I tried it out and it did but at the expense of a ragged right margin. I was able to straighten it without having to redo the whole newsletter (with the exception of one line, the second of the second column on page two). In the process I forgot to turn on the page numbering so had to write them in by hand.

The article by WA6DLI was in a different font because that is the way (almost) which he sent it. It was nice, readable, and bold, especially for those with poor eyesight. I did not want to retype it because he does a good job, retyping introduces errors, and retyping takes time. He had not included margins but fortunately I have access to a reducing copy machine which handled the problem nicely and improved the looks as well.

I do not have one of the several publishing programs that are available for the T/S 2068. I have never liked any of the fonts they use as seen on the other Sinclair newsletters QZX receives anyway. Some time I may try to get QZX out on the QL, but, because I already am fairly proficient with WordStar on the Osborne Executive, I have not yet invested in the time to learn that much detail about Quill. Besides all the QZX files are on CP/M format now.

I was pleased to note that QZX lost nobody from the group which expired in July, although the total list was down one from last month.

If you look closely at the masthead on this issue you will see some changes. I have added the Z88. The addition of the Z88 is significant. True, not many of our readers have one. It is expensive. But it does have its unique features and it is a Sinclair computer. The first article on the Z88 (aside from previous reviews, see January 1988 QZX) is inside where K6USW describes how he put it on packet. Now portable packet is a use where the Z88 really shines. Also a couple of items about the Z88 appear in the Bits and Bytes column.

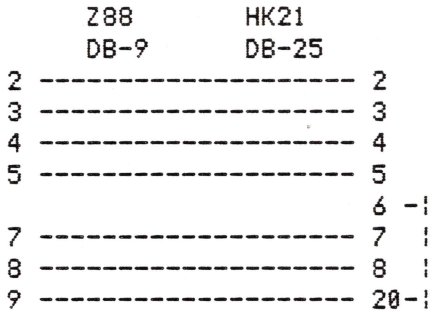
While on the subject of other computers, it is worth noting that recently two new inexpensive computers have been advertised. They are the IQ 8300 and the Power 3000. These are reported to be the same as the PC 8300, which is a billed as a clone of the ZX81, but is really quite different; although it will load ZX81 programs. For a review of the PC 8300 see the August 1987 QZX.

The CTM magazines advertised in the last issue were more popular than I expected. Two requests for them came in one day and more requests later. They have long since been sent to a new home, leaving me with more room to store issues of QZX. Boy did I ever underestimate the postage on them. The post office wanted over $16.00 to send them. Fortunately, UPS wanted less than $6.00.

THE Z88 ON PACKET
K6USW

The Z88 is the latest Sinclair compputer to pe put on packet. It is an ideal computer to use as a portable terminal for a really compact packet station. It is easy to put together too.

The combination used here is the Z88 connected to the HK21 packet controller. All it takes is a single seven wire cable connecting the two. The cable connections are given in the table below on the next page.



The arrangement of the wires is so straight forward that flat cable and crimp-on connectors can be used with relatively little trouble.

Once the cables have been connected set the Z88 to 9600 baud, even parity, and no xon xoff handshaking. Set the HK21 to 9600 baud also with awlwn8 on. If the screen scrolls too fast for you, set the data rate to a lower speed.

Have fun with this compact, battery operated packet combination.

ZX81 PARALLEL RESISTOR CALCULATOR

K5XY

Here is a short and simple program for the ZX81, TS1000, and TS1500 which will tell you what value of resistance must be put in parallel with an existing resistor to get a desired value. The program will be helpful if you are trouble shooting an already constructed circuit which is not working correctly. If you want to reduce the value of a resistor already in place, sometimes the easiest thing to do is to solder another resistor in parallel with the first. The program will also be useful during new construction when your junk box does not contain the needed resistance value. Often two resistors can be put in parallel to get the desired value.

Remember that when you put any resistor in parallel with a known resistor, the result is always less than the resistance with which you started. If the desired resistor is bigger than the starting resistor, another one must be put in series. That calculation is too simple to require a computer program.

ZX81 Parallel resistor calculator

```
100 CLS
110 PRINT "PROGRAM TO FIND THE
          VALUE OF R NEEDED TO
          BE PUT IN PARALLEL
          WITH A KNOWN RESISTOR,
          RK, TO GET A TARGET
          RESISTANCE, RT."
120 PRINT "ENTER THE VALUE OF
          THE KNOWN RESISTOR
          (IN OHMS)."
130 INPUT RK
140 PRINT "WHAT IS THE VALUE OF
          RESISTANCE YOU WISH
          TO HAVE (IN OHMS)."
150 INPUT RT
160 LET R = RT*RK/(RK-RT)
170 PRINT "THE VALUE OF R YOU
          MUST PUT IN PARALLEL
          WITH ";RK;" OHMS TO
          GET THE TARGET
          VALUE ";RT;" OHMS IS"
180 PRINT " R =  ";R;" OHMS."
190 PRINT
200 PRINT
210 PRINT "DO YOU WANT TO DO
          ANOTHER CALCULATION
          (Y OR N)"
220 INPUT A$
230 IF A$="Y" THEN GOTO 100
240 PRINT "THAT IS ALL FOR NOW."
250 STOP
```

The program is quite straight forward, but I shall mention some of its features for the begining programers among our readers. First some general comments. I start with line 100 rather than 10 so that, when the line numbers enter the 100 region, the line contents are not spaced over one column to accommodate the additional digit. I increase the line numbers by 10 each time so that I can easily add lines without renumbering if it becomes necessary. There are a lot of print statements

to make the program self documenting. These print lines could easily be made shorter and easier to type in, but they then would be less informative. It is better to spend a little extra time on the original program than to have to spend a lot of time later trying to decide just what you intended when the program was first written.

Comments on individual lines follow. Line 100 clears the screen so you can start with a clean TV, uncluttered by previous programs or previous runs of this program. Some programs start off with a non-working REM statement that tells the reader what the program does. This program prints that statement on the screen where it can be read without listing the program. Line 110 does this task.

The next four lines provide for the input of the data which the program needs. The input statements (lins 130 and 150) accept the desired input. Lines 120 and 140 provide statements on the screen which tell you just what data the program requires. Line 160 is the one line of the program which does the desired calculation. The following print lines display the data you put in (and hence let you check it) and the result of the calculation, which is the answer you want. Note particularly the spaces just inside the quote symbols in these print statements. They must be put in correctly to have the words in the resulting sentences spaced properly.

Line 210 starts a branch section. You are asked if you wish to do another, similar calculation. If you answer Y, line 230 returns you to the start of the program. If you answer N, the program says good bye and stops. Do not forget the quotes around the Y in line 230.

Note that the program actually stops if you enter anything other than Y. If you are a begining programer, you might want to try to think up an error checking routine which would not automatically regard any answer except Y as a no. The answer will be given next month.

UNCLASSIFIED ADS

WANTED: UNCLASSIFIED ADS for publication in QZX. Cost is 1 cent for each keystroke (characters, blanks, etc.). Payment must be included with order. This is an excellent way to sell your program or unwanted equipment, ask for help, or find a specific program. Send your ad with payment to QZX, 2025 O'Donnell, Las Cruces, NM 88001.

FOR SALE: Index to QZX consisting of a book of xerox copies of all the covers since December 1982. Send $5.00 plus $1.00 shipping and handling ($2.00 if to a non-US address) to QZX, 2025 O'Donnell, Las Cruces, NM 88001.

FOR SALE: Book ZX81 BASIC Book by Robin Norman. Paperback 190 pages. Originally $12.95 now $6.00 postpaid in US. Simple and clear introduction to ZX81 BASIC. Alex. F. Burr, K5XY, 2025 O'Donnell, Las Cruces, NM 88001.

QZX Discount: 15% discount on all orders mentioning QZX. T & C Services (address in ad this issue.)

FOR SALE: Book Inside CP/M Plus by D. E. Cortesi. Paperback 260 pages. Originally $18.45 now $9.00 postpaid in US. Very good for QL users with CP/M. Alex. F. Burr, K5XY, 2025 O'Donnell, Las Cruces, NM 88001.

FOR SALE: Book Easy-up Antennas for Radio Listeners and Hams by Edward Noll. Paperback (1988) 162 pages. Originally $16.95, now $11.00 postpaid in the US. A Sams publication. The title says it all. Alex. F. Burr, K5XY, 2025 O'Donnell, Las Cruces, NM 88001.

CENTRONICS PARALLEL INTERFACE

(LU 8 MAD)

Our microcomputer move data to and from peripheral devices in eight-bit bytes. There are two methods of moving a byte from one location to another. We can send all eight bit at once, or we can send one bit at a time. The one-bit-at-a-time approach is called serial data transmission, and the all-at-once approach is called parallel data transmission. Plotters and printers usually operate with parallel interfaces (usually CENTRONICS protocol).

This project consist of two external ports: Centronics, and a parallel interface.

The parallel interface consist of eight imput signal lines and eight output (latched) signal lines.

The Centronics interface consist of ten signal lines and ground Of the active lines (non-ground), eight are for data, one is strobe line, whtah indicates to the receiving device that it should take the data present on the data lines, one is BUSY signal, which goes high (usually) to indicate that the receiving device is busy, and not to transmit any more data until it goes low.

Some printers may have additional signals such as "PAPER END", "SELECT", "I-PRIME", "FAULT", "+ 5 Volts", etc.

What software is needed?

The programs described here can be adapted and expanded in a number of ways.

Program "TEST": can be used to test parallel I/O port. You must adapted this principle to your need.

Printer Program: The TS1000 uses its own special character code so in the program SINCLAIR code are translated to ASCII code before output.

ASCII encoded data (used to driver printer) requires seven bits, so the eight bit may be ignored or used for other purposes.

The routine is relocatable.

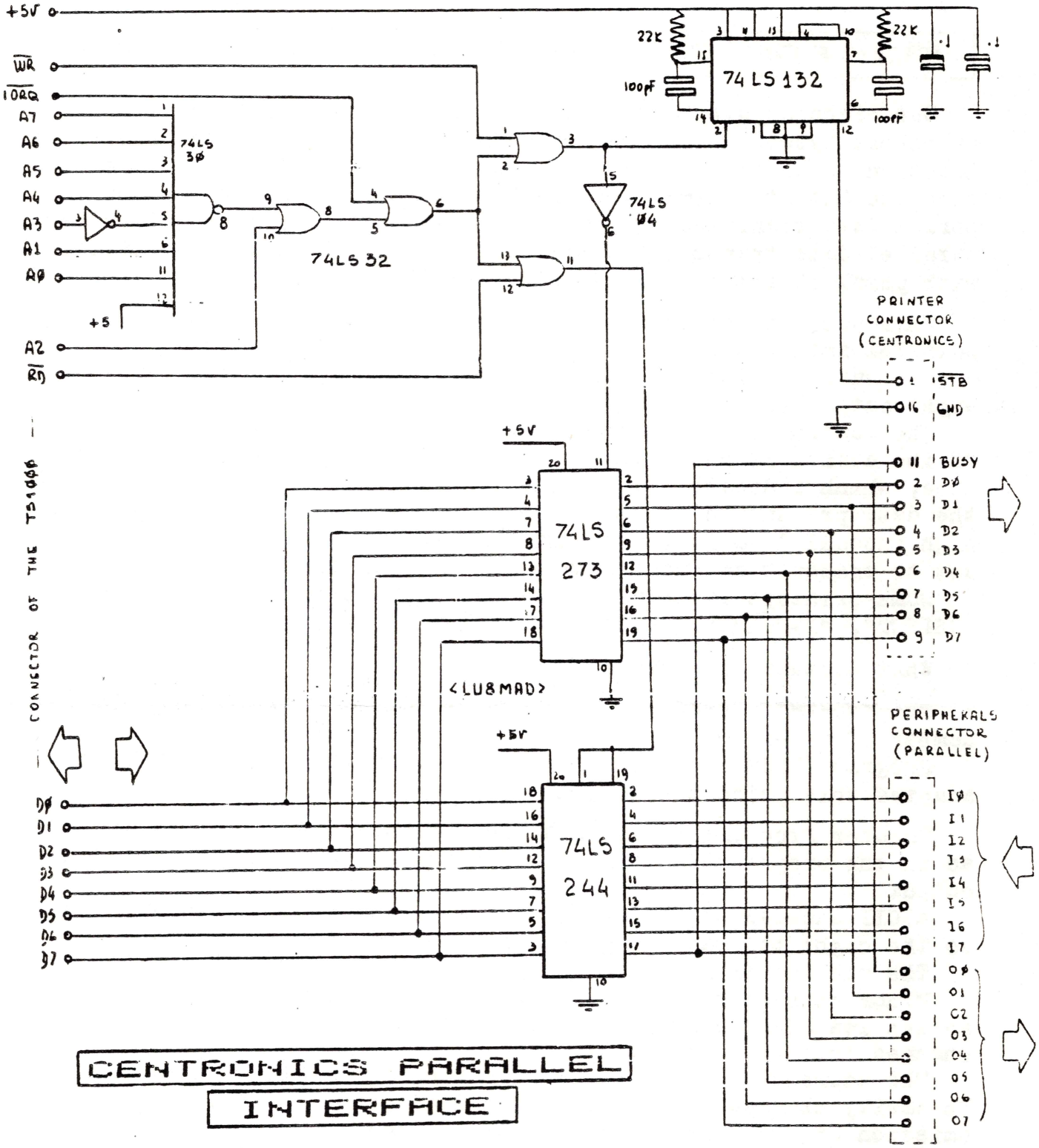
Minor changes may be needed for some printers. For example, an active low READY signal requires that the jump at 16669 must be changed from JR Z to JR NZ.

The addresses used by this interface is MAPPED I/O F3, but can be easily changed to FB (used by TS2040 printer) if you make an omission of inverter IC in line A3 and you must change 243 by 251 in ML at address 16647 and 16666.

PROGRAM "TEST"

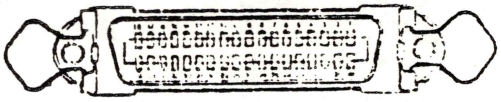
16514	219	IN A, N	16522	136	
16515	243		16523	64	
16516	6	LD B,N	16524	211	OUT N,A
16517	[illegible]		16525	243	
16518	79	LD C, A	16526	1	LD BC,NN
16519	201	RET	16527	0	
16520	0	DATA	16528	0	
16521	58	LD A, (NN)	16529	201	RET

```
 1 REM ..(16 bytes)..
 5 REM  OUTPUT
10 IMPUT B
20 POKE 16520,B
30 RAND USR 16521
35 STOP
40 REM IMPUT
50 LET F=USR 16514
60 PRINT F
```



CENTRONICS PARALLEL INTERFACE

$\overline{STB}$	DATA 0	DATA 1	DATA 2	DATA 3	DATA 4	DATA 5	DATA 6	DATA 7	$\overline{ACK}$	BUSY	NC	PULLUP	GND	NC	GND	GND	NC	GND	GND	NC
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20 ------- 29	30 ------ 36



```
  1 REM ...(159 BYTES)...
 10 INPUT A$
 20 FOR X=1 TO LEN A$
 30 IF CODE A$(X)<=10 THEN GOTO
80
 40 POKE 16664,CODE A$(X)
 50 RAND USR 16665
 60 NEXT X
 70 GOTO 10
 80 POKE 16642,CODE A$(X)
 90 RAND USR 16643
100 GOTO 60
```

PRINTER PROGRAM

```
  1 REM

16514_32 15          TABLE 1
16516 14 20
16518 13
16519 10
16520 8
16521 16 27
16523 28
16524 0
16525 34 38 36
16528 58 63 40
16531 41
16532 62 60
16534 61
16535 43
16536 45
16537 42 47 59
16540 44
16541 46 32
16543 64             TABLE 2
16544 33 91 126
16547 93
16548 94
16549 35
16550 0
16551 0
16552 0
16553 32 33          TABLE 3
16555 34 35 36
16558 37
16559 38 39
16561 95             LD E,A
16562 203 127        BIT 7,A
16564 32 13          JR NZ,16579
16566 214 28         SUB 28
16568 250 227 64     JP M,16611
16571 123            LD A,E
16572 214 64         SUB 64
16574 250 237 64     JP M,16621
16577 24 60          JR 16639
16579 123            LD A,E
16580 203 191        RES 7,A
16582 214 38         SUB 38
16584 250 219 64     JP M,16603
16587 123            LD A,E
16588 203 191        RES 7,A
16590 214 64         SUB 64
16592 250 251 64     JP M,16635
16595 123            LD A,E
16596 214 192        SUB 192
16598 33 169 64      LD HL,16553
16601 24 12          JR 16615
16603 123            LD A,E
16604 214 128        SUB 128
16606 33 158 64      LD HL,16542
16609 24 4           JR 16615
16611 123            LD A,E
16612 33 130 64      LD HL,16514
16615 79             LD C,A
16616 6 0            LD B,0
16618 9              ADD HL,BC
16619 126            LD A,(HL)
16620 201            RET
16621 123            LD A,E
16622 214 38         SUB 38
16624 250 247 64     JP M,16631
16627 123            LD A,E
16628 198 27         ADD A,27
16630 201            RET
16631 123            LD A,E
16632 198 20         ADD A,20
16634 201            RET
16635 123            LD A,E
16636 214 69         SUB 69
16638 201            RET
16639 62 255         LD A,255
16641 201            RET
16642 0              NOP
16643 58 2 65        LD A,(16642)
16646 211 243        OUT 243 ,A
16648 201            RET
16649 229            PUSH HL
16650 58 24 65       LD A,(16664)
16653 205 177 64     CALL 16561
16656 225            POP HL
16657 50 2 65        LD (16642),A
16660 205 3 65       CALL 16643
16663 201            RET
16664 0              NOP
16665_219 243        IN A,243
16667 203 127        BIT 7,A
16669 40 250         JR Z,16665
16671 195 9 65       JP 16649
16674 27             DEC DE
16675 27             DEC DE
```

CONTROL CODES (ASCII)

SI = shift in

SO = shift out

DC4 = device control 4

CR = carriage return

LF = line feed

BS = backspace

DLE = data link escape

ESC = escape

NUL = null / tape feed

FS = file separator

When you need for your printer some control codes, "Printer Program" will solve this problem for you. In fact, Sinclair graphics characters aren't included in the program printable character set and some are interpred by the printer as special control characters

You will include some control character into string A$ as part of text, and the printer (that not print those) consider those characters as control codes and respond accordingly.

ENDING

This program is only a starting-point for a more elaborated for your TS1000, with LIST, COPY, GRAPHIC, etc. capability.

73's Guillermo (LU8MAD)

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BITS AND BYTES

133 RENUMBER in SuperBAsic on the QL will change the line numbers in a GOTO or GOSUB statement. If that statement contains an expression starting with a number, RENUMBER will treat that number as a line number and change it. You may not want this to happen. Example

```
120 GOTO 200 + VAR
```

will have the 200 changed when the program is renumbered.

134 If you have a QL centronics parallel interface, there is no need to buy the Z88 CPI interface as tha QL version will work just fine.

135 Here are the suggested cable connections to use the Z88 with most modems.

```
      Z88        MODEM
      DB-9       DB-25
   2 -------------------- 2
   3 -------------------- 3
   4 -------------------- 4
   5 -------------------- 5
   7 -------------------- 7
   8 -------------------- 8 -¦
   9 -------------------- 6  ¦
                          20-¦
```

136 The following machine language program can be used on the ZX81, TS1000, or TS1500 to stop the program until the tape recorder starts imputing data.

```
     XXXX DBFE  HOLD:  IN A, (FE)
          CB7F         BIT 7,A
          28FA         JR Z, HOLD
```

where XXXX represents the address.

137 Some people have trouble with the microdrives on the QL. In some cases the cure is simple. Look into the slot of the faulty drive. If the capstan drive (on the left) is pushed up against the top of the QL case, reach in with a small screwdriver and push it back down. That may cure your problem. If the capstan drive keeps riding up, you might open the case and put a small drop of glue on the shaft to hold it in place.

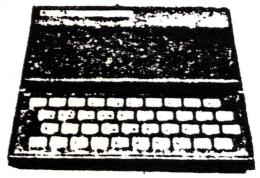
QZX FRIENDS

W3NHX -- Louis renewed and mentioned his ZX81 and T/S 1000.

K8NZZ -- Bob mentioned that he is getting ready to put his ZX81 and an MFJ 1274 on packet. He is also looking for ham software for his QL.

KV3Q -- Bob is getting ready to sail his boat to Florida. He has squeezed in a lot of ham gear including two meters, Ten Tec Argosy (appropriately named for a boat), a TS1500, Alpacom 32, Comlink II, and an MFJ 1270b. He could not find room for his QL and printer. He says that he will be on 7.268 MHz every day from about 0715 to 0830 EST.

W5GDL -- Chet says that he has just gotten a new TS2040 printer from American Design Components. It will go with his collection of seven TS computers - ZX81, TS1000, and TS1500. He comes from a real ham family - five licenses including his granddaughter.



73, K5XY

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```
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